



# UNITED STATES PATENT AND TRADEMARK OFFICE

60  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,978	02/10/2004	I-Ping Chung	31715-00061	1305
24919	7590	05/05/2005	EXAMINER	
MCAFEE & TAFT TENTH FLOOR, TWO LEADERSHIP SQUARE 211 NORTH ROBINSON OKLAHOMA CITY, OK 73102			BARROW, JAMES G	
			ART UNIT	PAPER NUMBER
			3749	

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/775,978	CHUNG ET AL.
	Examiner James G. Barrow	Art Unit 3749

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 14 May 2004.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-23 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_ is/are allowed.  
 6) Claim(s) \_\_\_\_ is/are rejected.  
 7) Claim(s) \_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 14 June 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____

**DETAILED ACTION*****Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "opening therein and the interior of said wall of said burner tile are substantially circular, rectangular, square, triangular, polygonal or other shape" (C: 8 and 19, L: 1-3) or "open end of said housing is circular, square, triangular, polygonal or other shape and said housing is cylindrical, square, rectangular, triangular, polygonal or other shape" (C: 9 and 20, L: 1-3) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 9, 10, 19, and 20, the phrase "or other shape" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or other shape"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d). The Examiner will examine the claims on the basis of circular, rectangular, square, triangular, or polygonal (C: 8 and 19, L: 1-3) or circular, square, triangular, polygonal or other shape and said housing is cylindrical, square, rectangular, triangular, or polygonal (C: 9 and 20, L: 1-3). Applicant must delete "polygonal or other shape" and insert --or polygonal--.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loftus et al (6,007,325) in view of Benson et al (6,672,858). Loftus et al discloses a low emissions burner having a cylindrical housing 14, an air register

or air flow control means 30, a circular burner tile 10 including primary fuel gas passageways 32, a plurality of fuel gas nozzles 40 positioned outside the burner tile with one or more gas nozzles 34 within the primary fuel gas passageways 32, a primary fuel gas nozzle 24 with a venturi 18 positioned around and above the primary fuel gas nozzle, and a flame stabilizing surface 19. However Loftus et al does not disclose the gas nozzles outside the tile with some discharging through primary gas passageways. Benson et al teaches a circular burner tile 13 with an exterior wall divided into sections by baffles (the structure between indentations 15 in figure 2) which extend in directions parallel to the axis of the burner having the same height (see figure 2) including primary fuel gas passageways 14, and a plurality of fuel gas nozzles 22 and 23 positioned outside the burner tile 13 with one or more gas nozzles 22 discharging through fuel gas primary fuel gas passageways 14 in the same field of invention for the purpose of recirculating "a significantly greater amount of furnace gases as compared to prior art designs. Surprisingly and unexpectedly we have found that recirculating such a large amount of the furnace gases dramatically reduces the amount of NO<sub>x</sub> gases formed without causing flame instability" (C: 2, L: 27-32). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the burner tile and fuel nozzles of Benson et al in place of the burner nozzles and burner tile of Loftus et al in order to increase "the amount of furnace gases returned to the burner improves the mixing and dispersion of the fuel gas prior to combusting the fuel with air. By using the relatively inert furnace gases to disperse the fuel gas prior to mixing with the combustion air in the primary

combustion zone, a cooler burning flame is achieved. A cooler flame in turn greatly reduces the undesirable formation of NO<sub>x</sub>" (C: 2, L: 32-39). At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a burner tile with alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape because the Applicant has not disclosed that alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well having a burner tile having alternating walls having different heights, having different sloping angle to the burner tile opening, or where the burner housing is circular, square, triangular, polygonal, or any other shape because the purpose of the invention is to recirculate the exhaust gas of the furnace with air and fuel to reduce NO<sub>x</sub>. Therefore, it would have been an obvious matter of design choice to modify Benson et al to obtain the invention as specified in claims 1-9, 14, and 16-20. Additionally in the disclosure states the "exterior sides of the wall are divided into sections by a plurality of radially positioned baffles attached thereto with alternate sections having the same or different heights and slanting towards the opening at the same or different angles" (P: 2, L: 18-21) and when the Applicant claims and

discloses the burner housing can be "any shape" a burner housing having any shape would meet the bounds of the claims.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loftus et al (5,993,193 or 5,984,665) were not used in rejection because it would have been redundant. McGill et al (5,284,438) and Martin et al (5,073,105) disclose burner have recirculation passageways through the burner tile. Zink et al (6,499,990) discloses a plurality of fuel nozzles around a stepped slope burner tile. Zink et al (4,00,875) discloses a burner having a primary fuel nozzle with a venturi.

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James G. Barrow whose telephone number is (571) 272-4870. The examiner can normally be reached on M-F, 9:30 A.M.-6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ira S. Lazarus can be reached on (571) 272-4877. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*James Barrow*  
James Barrow

*Cheryl J. Tyler*  
CHERYL TYLER  
SUPERVISORY PATENT EXAMINER